Overcoming Weatherization Barriers

A Survey of Resources to Address Barriers to Weatherization in Homes

Prepared for

E4TheFuture Inc.

e4thefuture.org

Prepared by

Elizabeth Bourguet and Richard Faesy

Energy Futures Group

energyfuturesgroup.com

December 23, 2020

Introduction

Weatherizing homes against the elements is a major way to save energy and money and improve comfort. Yet, programs and contractors commonly find health, safety, structural, and other barriers that preclude moving forward with weatherization work. These "weatherization barriers" are increasingly being recognized as significant hurdles in addressing homes' weatherization needs. While there are many programs to expand home weatherization, efforts to address these barriers are not as well-known, accessible, or widely utilized. This disconnect blocks progress in weatherizing our existing housing stock. This paper provides information and resources to help break through some of these barriers.

Weatherization involves upgrading the energy performance of homes through measures such as air sealing, insulation, window treatments or replacement, duct sealing, and tuning and repairing HVAC and water heating systems. When health, safety, or structural concerns prevent these upgrades from happening, weatherization work must be deferred. Common barriers to weatherization include the presence of asbestos, knob and tube wiring, mold, lead, structural issues, and venting and combustion safety issues, among others. Insulation, for example, cannot be installed if contractors would disturb or come into contact with health and safety hazards like mold or asbestos.

The issue of weatherization barriers is widespread. According to data from Connecticut's utilities, 165,000 homes in the state are barriered from weatherization work.[1] In addition, mitigating barriers to home weatherization is expensive and costs can be prohibitive. According to data collected from 2016 - 2019 Connecticut Clean Energy Healthy Homes Initiative Projects, the average cost of a job to remediate a barrier was about $20,000.[2] The problem disproportionately impacts low-income households. In a recent data review from 2017 to 2019, of the total low-income homes visited in Connecticut, 23% were barriered to install weatherization.[3]

Many barriers to home weatherization are considered health and safety issues. Improving homes to remediate mold, asbestos, or lead, for example, makes homes safer and healthier and clears away the barriers that allow for weatherization services, resulting in multiple benefits. However, when it comes to addressing these upgrades, there are two, often separate strategies: one energy-focused and one health-focused. While these two efforts have the same ultimate goal of improving homes, the separate approaches result in siloed funding and minimal coordination between programs.

---

[1] From 11/18/2020 EFG Connecticut Weatherization Barriers Presentation based on information provided by US Census and Eversource. Total of 1.4 million Connecticut housing units, with 21% income eligible. EnergizeCT program experience from 2017-2019 found 9% of Home Energy Solutions (HES) and 23% of HES-Income Eligible (HES-IE) were barriered. (1.4 million * 21% * 23%) + (1.4 million * 79% * 9%) = 165,000 barriered homes estimated in Connecticut.

[2] 2016 - 2019 Connecticut Clean Energy Healthy Homes Initiative Projects-https://portal.ct.gov/-/media/DEEP/energy/ConserLoadMgmt/Weatherization-Barriers-Workshop-1-Slides.pdf

[3] 11/18/2020 Eversource and United Illuminating presentation at Connecticut Weatherization Barriers Workshop, (https://portal.ct.gov/-/media/DEEP/energy/ConserLoadMgmt/Weatherization-Barriers-Workshop-1-Slides.pdf)

The goal of this white paper was to conduct an overview of the programs that exist to overcome weatherization barriers. Through this effort, we aim to gain an understanding of program elements, gather data on program use, and develop a snapshot of the existing programs, resources, and the extent to which they are used. This white paper is an exploration of the lessons learned gleaned from this research along with some recommendations. The accompanying summary fact sheet, more detailed matrix, and presentation offer an in-depth review of existing programs.

Methodology

The first step of this project was to determine the scope of the research, which we narrowed to focus on programs and resources available in the Northeast, as well as opportunities available nationwide. In addition, the results only include programs that are currently operating (but include those that have temporarily been paused because of the COVID-19 pandemic).

In the information gathering stage, we conducted internet research to gain an understanding of any programs that exist in the Northeast that may address weatherization barriers. In addition to researching program websites and reports, we connected with experts in the field who have an understanding of efforts to address barriers.

We collected program information including state, program name, amount of funding or financing available, eligibility, program administrator, barriers covered, and data on program usage. The data on program usage tried to capture the number of participants in a program, the amount of funding or financing used, and the number of barriers overcome through the program. We compiled this information in a matrix, which accompanies this report. The resources in the matrix include financing opportunities, funding opportunities, referral programs, and ideas for use of funds from the *Braiding Energy and Health Funding for In-Home Programs: Federal Funding Opportunities* report.[4]

In order to create a more user-friendly resource, we summarized this matrix into a fact sheet, included at the end of this paper. This sheet has each program narrowed down to key information about its opportunity and use, and the programs are divided into funding and financing opportunities. The intent is to provide quick and accessible information in order for the user to be able to compare easily across programs and resources.

The final step was to verify the information we had gathered about each program. We reached out to experts and program administrators via email and phone to verify the information on the matrix and to ask for any additional program information. This was an important step in more fully understanding the programs, as well as in gathering data on experience and program usage that is not always readily available to the public. We then incorporated feedback from each expert into the matrix.

[4] *Braiding Energy and Health Funding for In-Home Programs: Federal Funding Opportunities*, by Sara Hayes and Christine Gerbode, July 2020 ACEEE research report

Recommendations

We have developed a set of recommendations that aim to make weatherization barrier programs and resources more accessible to all homes, to make good use of available funding, and to connect the issues of energy conservation in homes with home health efforts.

There are common themes across programs that have emerged in our research which the recommendations attempt to address. One common problem is the lack of coordination among existing resources to barrier mitigation. Without coordination, it is difficult for households to be aware of and to access the resources available to them. Additionally, efforts to address weatherization barriers are often siphoned into either energy-related or health-related improvements. Innovative ways to combine these two efforts would maximize funding and strengthen efforts to improve homes, no matter what the stated end goal may be. Lastly, we highlight approaches that states employ when using funding from the federal Weatherization Assistance Program (WAP) and Low-Income Home Energy Assistance Program (LIHEAP) funds to address barrier mitigation. We try to extrapolate lessons learned from states' funding strategies, particularly Massachusetts, on how to leverage federal, state, or utility funds to address barriers and complete weatherization work.

Coordinate Among Existing Resources

While several states have more than one means of addressing weatherization barriers, there is not necessarily coordination between the resources. In Connecticut, for example, while the state has many barrier resources, the programs do not effectively communicate, leaving those resources unable to be fully utilized. We recommend a means of coordination within each state or jurisdiction in order to communicate all available local resources to contractors and program participants to ensure these resources are made available to everyone who could use them.

A potential solution is the OneTouch referral technology developed by Tohn Environmental Strategies, LLC.[5] OneTouch is an electronic referral tool that connects households to services that can address health and energy issues, including housing-related issues preventing energy work. The tool is already employed in several states and communities and has the potential to be expanded to serve as a resource that connects and coordinates across available programs.

During a home assessment, government or non-profit partners identify household needs through the OneTouch tool. This assessment includes a comprehensive survey of housing-related issues, including lead paint, mold and moisture issues, structural issues, and Vermiculite, among others. Based on the information provided, the referral tool then connects households with relevant resources and services that address the identified need. The tool enables program administrations to ensure their services are being accessed by those who need them, and referral information is recorded so they can maintain an accurate assessment of the program usage and the issues being addressed.

[5] https://onetouchhousing.com/

OneTouch is currently being used statewide in Vermont, where it is used in all single-family low-income WAP projects. It has also recently been implemented in Hartford and Waterbury, Connecticut with Home Energy Solutions-Income Eligible (HES-IE) households. In Hartford, early data shows that 50% of the energy clients need a referral, with most needing lead or healthy homes repairs that Connecticut Children's Medical Center can provide through grant funding. This referral makes it easy to connect low-income households with the services they need.

The OneTouch referral tool has the potential to serve as a clearinghouse to connect any household with the resources and services available in a given jurisdiction to address issues preventing energy work. The home assessment survey and resulting referral can be modified to reflect the different resources available in each state. If expanded into more states, OneTouch has the potential to be a valuable platform in coordinating resources and connecting households with available services.

Combine Health- and Energy-Focused Efforts

There is an overlap between efforts to improve homes for energy efficiency and those to improve homes for occupant health, with both addressing many of the same home improvement issues with different end goals. These differences in approach result in siloed funding sources, which are difficult to access or leverage. These home improvement measures could likely be more fully addressed if the energy-focused and health-focused efforts of improving homes were coordinated or combined. The concept of combining funds to provide home services that address both health and energy concerns, or "braided funding", is explored in the ACEEE report, *Braiding Energy and Health Funding for In-Home Programs: Federal Funding Opportunities* by Sara Hayes and Christine Gerbode.[6] The report investigates available federal funding that could combine health with energy efficiency funding to expand program services and reach.

One way to unite these two siloed efforts would be a referral system that connects health care institutions with weatherization programs. A health care institution or hospital that treats patients with asthma, chronic obstructive pulmonary disease (COPD), or any other illness exacerbated by home conditions should be able to easily refer these patients to a weatherization program that can address the unhealthy home conditions. The referral should include any resources available, whether WAP funding or a relevant utility or public program, and should be explicit about the patient need, the root cause of the problem stemming from unhealthy home conditions, and the solution, which could include addressing an inefficient building shell or heating system emissions, for example.

Once the referral program is in place, a funding structure could be set up so that the medical community could provide financial support for the work done by the energy program. This could be based on an assessment of decreased costs from reduced hospital visits. This would enable funds to flow across sectors and would be beneficial for both health care institutions and weatherization service providers.

---

[6] For more information on braided weatherization barriers funding, see *Braiding Energy and Health Funding for In-Home Programs: Federal Funding Opportunities*, by Sara Hayes and Christine Gerbode, July 2020 ACEEE research report.

Additionally, the cost effectiveness calculations that utility programs perform to justify spending ratepayer funds on energy saving programs should include the monetization of health benefits. While most states do not recognize these health benefits in their cost-effectiveness tests, Massachusetts includes health benefits for many measures, resulting in up to a $700 monetized benefit per low-income household that receives those services.

Leverage WAP and LIHEAP Funds to Maximize Funding Available for Barrier Mitigation

Federal WAP and LIHEAP funds are available to all states to address low-income home weatherization and energy needs, and states are able to use both funds to address weatherization barriers. States determine how much of the funding they receive go towards barrier remediation.

LIHEAP Funds:
The purpose of the Low-Income Home Energy Assistance Program (LIHEAP), which is administered by the U.S. Department of Health and Human Services, is to assist low-income households in meeting their immediate home energy needs. States are allowed to allocate up to 15% of their LIHEAP grant to deliver weatherization services, which includes health and safety measures. States are also allowed to allocate up to 5% of their LIHEAP grant to deliver "Assurance 16 Services", which includes "services that encourage and enable households to reduce their home energy needs and thereby the need for energy assistance."[7]

Each state spends different amounts of their LIHEAP funds on weatherization assistance. Approximately 9.65% of total federal LIHEAP funds were used on weatherization assistance benefits in 2015.[8] States generally have more flexibility using LIHEAP funds to install weatherization measures and address weatherization barriers than WAP funds. The flexibility can vary depending on how the state agency administering LIHEAP develops its LIHEAP State plan.

WAP Funds:
The Weatherization Assistance Program (WAP), administered by the U.S. Department of Energy, also allows for funds to be used to address specific health and safety measures. At least 15% of WAP funds can be used to address health and safety measures. Budgets that exceed 15% require justification, but are potentially allowable, as defined in WPN 17-7.[9]

Massachusetts serves as an example of an innovative use of funds to deliver weatherization barrier services. To address weatherization barriers for low-income customers in Massachusetts, program administrators use a combination of LIHEAP, WAP and utility funds. A portion (about 10%) of the state's LIHEAP funds are allocated to heating system repair and replacement. And, while a portion of WAP funds (up to 15%) could technically be used for weatherization barriers, Massachusetts chooses to spend their approximately $5

---

[7] U.S. Department of Health and Human Services, ABOUT ASSURANCE 16, accessed 12/14/20, https://liheapch.acf.hhs.gov/delivery/sufficiency.htm.

[8] Information about every state's LIHEAP spending and the proportion they spend on weatherization assistance can be found here: https://liheappm.acf.hhs.gov/reports_to_congress

[9] DOE Weatherization Program Notice: https://www.energy.gov/sites/prod/files/2017/08/f35/WPN%2017-7%20H%26S%208.9.17.pdf

million per year WAP allocation solely on energy improvements because they are able to leverage utility funds to pay for weatherization barriers.

Massachusetts utility program administrators, through the statewide "Mass Save" ratepayer-funded program, provides about $1 million annually to the Low-Income Energy Affordability Network (LEAN) specifically for weatherization barriers. LEAN, an association of the Massachusetts non-profit agencies that deliver the WAP program, allocates the Mass Save funds to their network to be used to address structural and weatherization barriers in homes. This approach allows for 100% of the federal WAP funds to be spent on energy-savings measures while leveraging Mass Save funds for barrier mitigation. Massachusetts rules specify that "programs" and not "measures" need to be cost-effective, so as long as the cost of the bundle of weatherization barriers along with the energy improvements is cost-effective, this approach is allowable.

Program administrators can learn some valuable lessons from Massachusetts. While some portion of WAP funds could be used to address weatherization barriers in the state, by leveraging funding from local utility programs and/or LIHEAP, states like Massachusetts are able to allocate 100% of their federal WAP funds to energy savings measures, thereby maximizing their allocation. In order to fully leverage WAP funds, we recommend increasing the availability of WAP funds beyond the $1,000 limit in states where utility or state funds are available to complete weatherization work.

Additionally, flexibility in leveraging available resources and rules for how those funds are spent for customers is key to making multiple funding streams effective in addressing weatherization barriers while maximizing energy improvements in homes. Program cost-effectiveness rules that allow for bundling weatherization barrier costs along with the energy improvement costs provide more flexibility in program design and delivery. States should also consider allowing cost effectiveness calculations on a program or sector basis rather than on a house by house or measure by measure basis.

Conclusion

Eliminating barriers to weatherization work is a major opportunity to significantly expand the benefits of home weatherization. Those looking to develop meaningful ways to address barriers should consider creatively leveraging federal and state funds to maximize funding available for weatherization work. States or jurisdictions with multiple existing programs should consider coordination among programs, including establishing a clearinghouse for accessing these programs and connecting home occupants with the services they need. And connecting energy-focused and health-focused home improvement efforts has the potential to address housing-related needs more fully. Through these measures, we can more effectively deliver energy and financial savings and create healthy home conditions.

Weatherization Barriers Resources Summary Fact Sheet

State	Program name	Amount ($)	Eligibility	Program Administrator	Barriers Covered	Experience & Data	See More
Financing							
Connecticut	Smart-E Loan	25% can go to lead removal, knob and tube wiring, electric upgrades; Up to $25,000 can go to asbestos or mold remediation	Must be owner-occupied; Must be a 1- to 4- unit residential building	Administered by CT Green Bank in partnership with Energize CT	Asbestos removal Mold remediation Lead removal Knob and tube wiring Electric upgrades	Number of asbestos/ mold remediation loans: 9 -Total loan amount financed: $52,000 Number of lead removal/ knob and tube/ electric upgrades: 28 -Total loan amount financed: $91,050	https://www.energizect.com/your-home/solutions-list/smarte
Connecticut	Energize CT Health & Safety Revolving Loan Fund	Loans from $10,000 to $300,000 (waivers for larger loans are possible)	Multifamily properties (5+ units); At least 60% of the units serve low income residents (households with incomes at 80% of AMI or less)	Administered by CT Green Bank in partnership with Energize CT	Most energy-related health and safety measures	From June 2017- June 2020: Funding closed (executed loan agreement in place): $20,000 Funding deployed (funds drawn down): $145,307 Funds still available: $1,334,692	https://ctgreenbank.com/programs/multifamily/energizect-health-safety-loan/
Connecticut	Loans Improving Multifamily Efficiency (LIME) Loan	25% can go to barrier removal	Multifamily properties (5+ units); At least 60% of the units serve low income residents (households with incomes at 80% of AMI or less)	Administered by CT Green Bank in partnership with Capital for Change	Most energy-related health and safety measures	Number of loans: 30 Total loan amount financed: $13,500,000	https://ctgreenbank.com/programs/multifamily/lime/
Connecticut	Navigator Pre-Development Loan	Up to $250,000. Owners cover 25% of pre-development costs; CT Green Bank loans 75% of costs	Multifamily properties (5+ units)	Administered by CT Green Bank in partnership with Energize CT	Identification of project health and safety remediation needs	Number of loans: 11 Total loan amount financed: $1,383,676	https://ctgreenbank.com/programs/multifamily/navigator/
Connecticut	CT Children's Hospital Healthy Homes Program	$5000 per unit to make homes safe and healthy; Lead hazard funding on a sliding scale- single family is up to $15,000	Private property owner; Eligibility depends on funding source; either 80% of AMI or 120% poverty line	CT Children's Hospital	Most health and safety barriers, mainly lead abatement, asbestos, mold, structural concerns	Since 2003, they've made more than 3,100 housing units lead safe	https://www.connecticutchildrens.org/community-child-health/community-child-health-programs/healthy-homes-program/
Massachusetts	HEAT Loan	$10,000 for knob and tube wiring; vermiculite $4,000 for mold abatement $1,000 for structural concerns; combustion safety	Must be accompanied by weatherization work	Administered by Mass Save	Knob and tube wiring Vermiculite, Mold abatement, Structural concerns, Combustion safety	Not available	https://www.masssave.com/en/saving/residential-rebates/heat-loan-program/eligible-services
New York	Green Jobs Green NY	Up to 50% can go to ancillary health and safety measures	Program covers LMI and non-LMI loans	Administered by NYSERDA	Asbestos removal Roof repair Venting (at least)	General data (not barrier-specific) can be found here: https://www.nyserda.ny.gov/Researchers-and-Policymakers/Green-Jobs-Green-New-York/Data-and-Trends	https://www.nyserda.ny.gov/Researchers-and-Policymakers/Green-Jobs-Green-New-York
Rhode Island	HEAT Loan	$10,000 for knob and tube wiring; vermiculite $4,000 for mold abatement $1,000 for structural concerns; combustion safety	Must be an owner of a 1-4 family home	National Grid	Knob and tube wiring Vermiculite, Mold abatement, Structural concerns, Combustion safety	In 2019, 24 customers included weatherization barriers as part of their loan	https://www.nationalgridus.com/RI-Home/Default.aspx
Rhode Island and Massachusetts	Double Green Loan	Loans range from $500 to $25,000	Moderate-to-middle income homeowners with less-than-perfect credit	Capital Good Fund in partnership with National Grid	Removal of knob-and-tube wiring Any other measure that National Grid has deemed eligible	Not available	https://capitalgoodfund.org/en/loans/doublegreen
Vermont	Home Energy Loan	Loans up to $40,000; 50% can be used towards barrier removal	Owned and occupied by the borrower; 1 to 4 family housing units	Administered by Efficiency VT	Health and safety repairs	Not available	https://www.efficiencyvermont.com/services/financing/homes/home-energy-loan
Funding							
Connecticut	Home Energy Solutions- Income Eligible (HES-IE)	Packages including barrier removal must be cost-effective	Low-income households; income is below the state's 60 percent income median	Administered by Energize CT	Minor fixes such as knob-and-tube wiring, possibly some ventilation or venting bath fans out of the attics.	Not available	https://www.energizect.com/your-home/solutions-list/save-energy-and-money-all-year-long
Delaware	Pre-Weatherization Program	Covers cost of barrier removal	Low-income households; for houses deferred from the WAP program	Energize Delaware	Structural: Loose flooring Roof leaks Doors and windows Faulty wiring	Pre-WAP units completed as of Dec 2019: 356 Units completed WAP: 324 Average cost of repairs per unit: $4000 Source in matrix	http://www.dnrec.delaware.gov/energy/Documents/Weatherization/2018-Annual-Weatherization-Assistance-Program-Report.pdf
Massachusetts	Barrier Mitigation Grants/ "Expanded Loan"	$7000 for knob and tube wiring; vermiculite $4000 for asbestos	Moderate income customers (must be income verified by their local CAP)	Administered by Mass Save; funded by MA DOER	Knob-and-tube wiring Asbestos Vermiculite	Not available	https://www.mass.gov/service-details/barrier-mitigation-grants
Massachusetts	Mass Save	Covers cost of barrier removal	Low-income households	Massachusetts Community Action Program Agencies and Low-Income Energy Affordability Network (LEAN)	All weatherizaton barriers	Not available	https://www.masssave.com/saving/income-based-offers/income-eligible-programs

State	Program name	Amount ($)	Eligibility	Program Administrator	Barriers Covered	Experience & Data	See More
New York	Assisted Home Performance with Energy Star	Covers 50% of EE improvements up to $5,000 per project for single-family homes; 2- to 4-unit homes may qualify for up to $10,000	Must be homeowner Available to <60-80% AMI households	Administered by NYSERDA	Requires Combustion safety testing Bathroom venting required during shell improvement	General data (not barrier-specific) can be found here: https://data.ny.gov/Energy-Environment/Residential-Existing-Homes-One-to-Four-Units-Energ/assk-vu73	https://www.nyserda.ny.gov/All%20Programs/Programs/Assisted%20Home%20Performance%20with%20ENERGY%20STAR
New York	EmPower New York	Covers cost of energy improvements	Available to households <60% AMI, includes homeowners and renters	Administered by NYSERDA	Most energy-related health and safety measures	General data (not barrier-specific) can be found here: https://data.ny.gov/d/4a2x-yp8g	https://www.nyserda.ny.gov/All-Programs/Programs/EmPower-New-York
Rhode Island	Rhode Island Weatherization Barrier Incentive	Up to $250	Must participate in the National Grid EnergyWise Home Energy Assessment Program; Must be a resident or owner of a 1-4 family home	Administered by National Grid	Knob and tube wiring Ventilation Mechanical systems (draft failure, carbon monoxide)	Not available	https://www.nationalgridus.com/RI-Home/Default.aspx
U.S.	Zonolite Attic Insulation Trust	Up to 55% of the abatement cost	Must be homeowner with ZONOLITE brand of vermiculite insulation	Administered by the Zonolite Attic Insulation Trust	ZONOLITE brand of vermiculite attic insulation	Number of claims made between 2014-2019: 6,196 Average claim amount (w/o extraordinary claims): $3,302	https://www.zonoliteatticinsulation.com/
U.S.	Low Income Home Energy Assisance Program (LIHEAP)	States are allowed to allocate up to 15% of LIHEAP grant to weatherization services, including health and safety measures	Low-income households	Administered by the US Department of Health and Human Services	Weatherization assistance, including health and safety measures	Data on each state's LIHEAP spending and the proportion spent on weatherization assistance can be found here: https://liheappm.acf.hhs.gov/reports_to_congress Approximately 9.65% of total federal LIHEAP funds were used on weatherization assistance benefits in 2015	https://www.acf.hhs.gov/ocs/programs/liheap/about
U.S.	Low Income Weatherization Assistance Program (WAP)	At least 15% of WAP funds can be used to address health and safety measures. Budgets that exceed 15% require justification	Low-income households	US Department of Energy	DOE has specific guidelines for which barriers can be funded	Each state varies Example: CT WAP: 14.86% of the budget is for health and safety measures (~$2,600/home)	https://www.energy.gov/eere/wap/weatherization-assistance-program
Referral							
Connecticut and Vermont	One Touch	N/A	Used in all low-income jobs in Vermont; used with HES-IE households in Connecticut	Tohn Environmental Strategies	Referrals to home health and safety services	Used in over 4,000 homes in Vermont; over 30% of these homes needed a referral	https://onetouchhousing.com/us/
Massachusetts	Home Energy Assessment Program	N/A	Homeowners of 1-4 unit properties	Mass Save	Referrals to home health and safety services	Combustion safety barriers removed (2019): 78 Knob and tube barriers removed (2019): 368 Combustion safety barriers removed (2020): 21 Knob and tube barriers removed (2020): 257	https://www.masssave.com/saving/energy-assessments/homeowners